PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 01 September 2000 (01.09.00)	
International application No. PCT/US99/29559	**Applicant's or agent's file reference** 23959-04021
International filing date (day/month/year) 13 December 1999 (13.12.99)	**Priority date** (day/month/year) 14 December 1998 (14.12.98)
Applicant REFFNER, John, A. et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

14 July 2000 (14.07.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
23959-04028		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US99/29559	13 DECEMBER 1999	14 DECEMBER 1998
International Patent Classification (IPC) or national classification and IPC IPC(7): GO2B 3/00 and US Cl.: 359/350, 356/346, 356/237.2		
Applicant SENSIR TECHNOLOGIES		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

   I ☒ Basis of the report

   II ☐ Priority

   III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability

   IV ☐ Lack of unity of invention

   V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI ☐ Certain documents cited

   VII ☐ Certain defects in the international application

   VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
14 JULY 2000	21 FEBRUARY 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer GEORGIA EPPS Telephone No. (703) 308-4883

Form PCT/IPEA/409 (cover sheet) (July 1998)*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US99/29559

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed

[X] the description:
pages 1-27 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

[X] the claims:
pages 28-38 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

[X] the drawings:
pages 1-8 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

[X] the sequence listing part of the description:
pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in printed form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the writen sequence listing has been furnished.

4. [X] The amendments have resulted in the cancellation of:

[X] the description, pages NONE

[X] the claims, Nos. NONE

[X] the drawings, sheets/~~fig~~ NONE

5. [ ] This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US99/29559

V. Reas ned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. statement

Novelty (N)	Claims	1-42	YES
	Claims	NONE	NO
Inventive Step (IS)	Claims	24, 27-31 and 35-42	YES
	Claims	1-23, 25, 26 and 32-34	NO
Industrial Applicability (IA)	Claims	1-42	YES
	Claims	NONE	NO

2. citations and explanations (Rule 70.7)

Claims 1-8, 12-17, 25 and 26 lack an inventive step under PCT Article 33(3) as being obvious over Worster et al.(U.S. Patent No. 5,963,314) in view of Lewis et al.(U.S. Patent No. Re. 36,529).

Regarding claims 1-8 Worster discloses a lens to produce a magnified real image(fig 2, 205)on a photo detector(fig 2 212); electronic display apparatus(fig 2,215); electronic scaling apparatus(fig 2, 213-214 and col 14, lines 40-50). Worster does not discloses an array of photo-detectors or a minor fraction of the total magnification of the image of the sample is produced by the lens. Regarding the array of photo detectors, Lewis et al. discloses an array of photo-detectors. It would have been obvious to one skilled in the art at the time of the invention, to use an array of photo detectors as shown by Lewis et al., in the in the imaging device of Worster et al., since as shown by Lewis et al. arrays of photodetectors are commonly used in imaging device for detecting light from an object to be imaged. Regarding the major part of the magnification is produced by the electronic scaling. Worster discloses a lens positioned for magnification as well as electronic magnification. However, Worster does not discloses the exact magnification provided by the electronic means. It would have been obvious an obvious matter of design choice to increase the magnification from the electronic means when compared to the lens magnification, since the applicant has not disclosed that having the magnification from the electronic means being much greater than the lens solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a more balanced magnification between the electronic magnification means and the lens magnification means.

Regarding claim 12, Worster discloses using a charge coupled video camera(col 10 lines 5-12).

Regarding claims 13 and 25, Worster does not discloses using a television receiver. However, Worster discloses using a computer monitor(fig 2, 215). It would have been obvious an obvious matter of design choice to use a television receiver, since the applicant has not disclosed that using television (Continued on Supplemental Sheet.)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):
receiver solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a computer monitor.

Regarding claim 14 and 26, Worster discloses using a computer monitor(fig 2, 215).

Regarding claim 15, Worster discloses using a recording apparatus(fig 2, 214).

Regarding claim 16, Worster discloses an apparatus for supporting a sample(fig 2, 224).

Regarding claim 17, Worster discloses the apparatus is a plate(fig 2, 214).

Claim 9 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim rejection 1 above, Lewis in view of Worster, and further in view of Johansson(U.S. Patent No. 4,764,016).

Regarding claim 9, a modified Lewis does not disclose the focal length of the lens or specifically the focal length is between 2.5 and 50mm. However, Johansson discloses a lens with a focal length between 2.5 and 50 mm(col 3, lines 1-10). It would have been obvious to one skilled in the art at the time of the invention, to use a lens with a focal length of 2.5 mm, as shown by Johansson, in the in the imaging device of Lewis et al., since as shown by Johansson, lenses with a focal length of 2.5 mm are commonly used for focusing light on objects to be viewed.

Claims 10 and 11 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim rejection 1 above and further in view of Gordon et al.(U.S. Patent No. 6,057,540).

Regarding claims 10 and 11, Worster does not disclose the diameter of the photo detectors used. However, Gordon et al. discloses using photo detectors which are 45 by 45 microns(col 4, lines 35-50). It would have been obvious to one skilled in the art, at the time of the invention to use photo detectors which are 45 by 45 microns, as shown by Gordon et al., in the imaging device of Worster, since as shown by Gordon et al., photo detector 45 by 45 microns are commonly used in imaging devices to detect light flux. Additionally,it would have been obvious an obvious matter of design choice to use photodetectors of other sizes, since the applicant has not disclosed that using photo detector which are 1/4 inch in size solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with photo detectors of 45 by 45 microns.

Claims 1, 17, 21 and 22 lack an inventive step under PCT Article 33(3) as being obvious over Lewis et al.(U.S. Patent No. Re. 36,529)in view of Worster et al.(U.S. Patent No. 5,963,314).

Regarding claim 1, Lewis discloses a lens to produce a magnified real image(fig 1, 32)on a photo detector array(fig 1, 46); electronic display apparatus(fig 2, 110); Lewis does not disclose an electronic scaling apparatus or a minor fraction of the total magnification of the image of the sample is produced by the lens. However Worster discloses an electronic scaling apparatus(fig 2, 213-214 and col 14, lines 40-50). It would have been obvious to one skilled in the art at the time of the invention, to use an electronic scaling apparatus as shown by Worster et al., in the imaging device of Lewis et al., since as shown by Worster et al. an electronic scaling apparatus is commonly used in imaging devices for aiding in the viewing of the object. Regarding the major part of the magnification is produced by the electronic scaling. A modified Lewis discloses a lens positioned for magnification as well as electronic magnification. However, lewis does not discloses the exact magnification provided by the electronic means. It would have been obvious an obvious matter of design choice to increase the magnification from the electronic means when compared to the lens magnification, since the applicant has not disclosed that having the magnification from the electronic means being much greater than the lens solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a more balanced magnification between the electronic magnification means and the lens magnification means.

Regarding claims 17, Lewis et al. discloses where the window is transparent(fig 1, 33).

Regarding claim 21, Lewis et al. discloses the plate is part of a internal reflection element used for spectroscopic(col 5, lines 5-10 and col 4, line 60 to col 5, line 10)

Regarding claim 22, Lewis et al. discloses a low voltage lamp(col 5, line 21).

Claims 18-20 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in claim rejection 17 above and further in view of Hochstein(U.S. Patent No. 5,649,972).

Regarding claim 18-20, Lewis et al. does not disclose the material of the glass plate is made of zinc selenide(which is abrasion resistant). However, Hochstein discloses a window material which allows light to pass through made of zinc selenide. It would have been obvious to one skilled in the art at the time of the invention, to use a window material made of zinc selenide as shown by Hochstein, in the in the imaging device of Lewis et al., since as shown by Hochstein, an window material made of zinc selenide is commonly used in devices which requires a window material for light to pass through.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Claim 23 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim rejection 1 above, Lewis in view of Worster, and further in view of Yamamoto et al.(U.S. Patent No. 5,329,354).

Regarding claim 23, Lewis does not disclose using optical fibers for delivering the light to the sample to be illuminated. However, Yamamoto et. discloses using fiber optics to deliver the light to the object to be illuminated stating that this allows for reduction in the size of the apparatus(fig 1, 20 , 21). It would have been obvious to one skilled in the art at the time of the invention, to use optical fibers for delivering the light to the sample, as shown by Yamamoto et al., in the in the imaging device of Lewis et al., since as shown by Yamamoto et al., optical fibers for delivering the light to the sample are commonly used in order to reduce the size of the apparatus.

Claims 32 and 33 lack an inventive step under PCT Article 33(3) as being obvious over Worster et al.(U.S. Patent No. 5,963,314) in view of Lewis et al.(U.S. Patent No. Re. 36,529)and Reid et al. (U.S. Patent No. 6,005,964).

Regarding claims 32 Worster discloses a lens to produce a magnified real image(fig 2, 205)on a photo detector(fig 2 212); electronic display apparatus(fig 2,215); electronic scaling apparatus(fig 2, 213-214 and col 14, lines 40-50). Worster does not discloses an array of photo-detectors, a minor fraction of the total magnification of the image of the sample is produced by the lens or the image is magnified up to 1000 times. Regarding the array of photo detectors, Lewis et al. discloses an array of photo-detectors. It would have been obvious to one skilled in the art at the time of the invention, to use an array of photo detectors as shown by Lewis et al., in the in the imaging device of Worster et al., since as shown by Lewis et al. arrays of photodetectors are commonly used in imaging device for detecting light from an object to be imaged. Regarding the major part of the magnification is produced by the electronic scaling. Worster discloses a lens positioned for magnification as well as electronic magnification. However, Worster does not discloses the exact magnification provided by the electronic means. It would have been an obvious matter of design choice to increase the magnification from the electronic means when compared to the lens magnification, since the applicant has not disclosed that having the magnification from the electronic means being much greater than the lens solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a more balanced magnification between the electronic magnification means and the lens magnification means. Regarding the magnification being 1000 times. Reid et al. discloses using an imaging device with an objective lens with a magnification of 1000 times(col 8, lines 25-30). It would have been obvious to use an objective lens with a magnification of 1000 times as shown by Reid et al., in the imaging device of Worster, since as shown by Reid et al., imaging systems commonly use objective lenses with a magnification of 1000 times to view objects of microscopic size.

Regarding claim 33 Worster discloses a computer monitor(fig 2, 215).

Claims 34 lack an inventive step under PCT Article 33(3) as being obvious over Worster et al.(U.S. Patent No. 5,963,314) in view of Lewis et al.(U.S. Patent No. Re. 36,529)and Abe (U.S. Patent No. 5,966,204).

Regarding claims 34 Worster discloses a lens to produce a lens to produce a magnified real image(fig 2, 205)on a photo detector(fig 2 212); an internal reflection element having a surface electronic display apparatus(fig 2,215); electronic scaling apparatus(fig 2, 213-214 and col 14, lines 40-50). Worster does not discloses an array of photo-detectors, a minor fraction of the total magnification of the image of the sample is produced by the lens or the lens is positioned below the support. Regarding the array of photo detectors, Lewis et al. discloses an array of photo-detectors. It would have been obvious to one skilled in the art at the time of the invention, to use an array of photo detectors as shown by Lewis et al., in the imaging device of Worster et al., since as shown by Lewis et al., arrays of photodetectors are commonly used in imaging device for detecting light from an object to be imaged. Regarding the major part of the magnification is produced by the electronic scaling. Worster discloses a lens positioned for magnification as well as electronic magnification. However, Worster does not discloses the exact magnification provided by the electronic means. It would have been an obvious matter of design choice to increase the magnification from the electronic means when compared to the lens magnification, since the applicant has not disclosed that having the magnification from the electronic means being much greater than the lens solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a more balanced magnification between the electronic magnification means and the lens magnification means. Regarding the lens being placed below the support. Abe discloses that a microscope attached to a display can also be rearranged to place the lens below the support or what is called an inverted microscope(col 10 lines 60-67). It would have been obvious to invert the microscope, as shown by Abe, in the imaging device of Worster, since as shown by Abe, microscope imaging systems commonly are inverted so as to view the sample with the light passing through it, as opposed to reflecting the light off of the sample.

Claims 1-42 meet the criteria set out in PCT Article 33(2)&(4), because the prior art does not teach or fairly suggest the limitations of the prior art and the invention can be used in industry.

Claims 24 and 27-31 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest: a lens designed and adapted to produce a magnified real image: an electronic imagine scaling apparatus, and most importantly a miniaturized opto electronic image magnifier or ambient light is used.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Claims 35-42 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest; a lens designed and adapted to produce a magnified real image; an electronic imagine scaling apparatus wherein the majority of the magnification is produced by the electronic scaling apparatus; an internal reflection element having a surface adopted to contact a sample and providing a first optical path for spectral measurement and a second path for viewing the sample.

---------- NEW CITATIONS ----------

US 6,057,540 A (Gordon et al.) 02 May 2000 [02.05.2000], see column 4, lijnes 34-50.

US 6,005,964 A (Reid et al.) 21 December 1999 [21.12.1999], see column 8, lines 25-30.

US 4,764,016 A (Johansson) 16 August 1998 [16.04.1988], see column 3, lines 1-10.

US 5,966,204 A (Abe) 12 October 1999 [12.10.1999], see column 10, lines 60-67.

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(71) Applicant *(for all designated States except US)*: SENSIR TECHNOLOGIES, LLC. [US/US]; 5 Great Pasture Road, Danbury, CT 06810–8153 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: REFFNER, John, A. [US/US]; 8323 Cloverleaf Drive, Millersville, MD 06902 (US). STING, Donald, W. [US/US]; 84 Turtleback Road, New Canaan, CT 06840 (US).

(74) Agent: RICH, James, A.; Calfee, Halter & Griswold, LLP, 800 Superior Avenue, Cleveland, OH 44114–2688 (US).

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Published

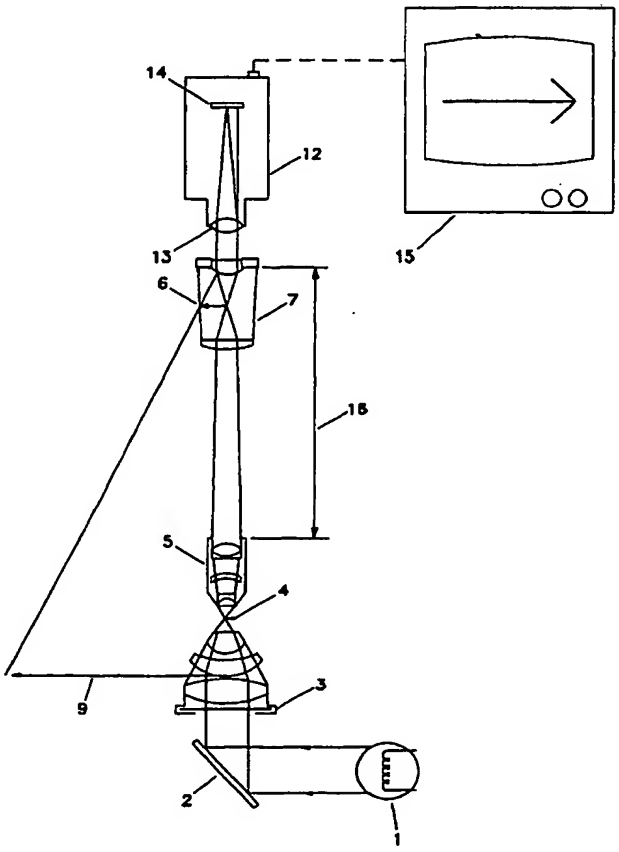
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: MINIATURIZED OPTO–ELECTRONIC MAGNIFYING SYSTEM

(57) Abstract

An opto–electronic image magnifying system. The magnifiying system includes: a light source (38, 39) which illuminates an object to be viewed; a miniaturized opto–electronic magnifier module (MOM), made of a lens (31) and a photodetector array (32), which receives the light from the illuminated object; an electronic circuit (34) which receives the signal from the MOM; a video–monitor (35) which receives the magnified signal from the electronic circuit and displays the image. The opto–electronic image magnifying system allows for small objects or features of small objects to be observed in which historically compound microscopes or specialized optical viewing systems were required to observe the small objects.



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